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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/647,703 | 08/25/2003 | Muhammad S. Bakir | 62020-1260 | 2719 |

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EXAMINER

ROJAS, OMAR R

ART UNIT PAPER NUMBER

2874

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,703

Applicant(s)

BAKIR ET AL.

Examiner

Omar Rojas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-32 is/are allowed.
- 6) ☒ Claim(s) 1-5, 10, 15, 17, 19-21 and 33-38 is/are rejected.
- 7) ☒ Claim(s) 6-9, 11-14, 16, 18 and 22-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2004 and 27 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-38 in the reply filed on June 10, 2005 is acknowledged.

Information Disclosure Statement

2. The prior art documents submitted by applicant in the Information Disclosure Statement(s) filed on January 23, 2004 have all been considered and made of record (note the attached copy of form(s) PTO-1449).

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-3, 15, 17, 20, 21, and 33-37 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent No. 6,067,134 A to Akiyama et al. (hereinafter "Akiyama").**

Regarding claim 1, Akiyama discloses an input/output (I/O) interconnect system, comprising: a first substrate 102 having at least one compliant pillar 20 transversely extending from the first

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Regarding claims 15 and 17, Akiyama discloses an electrical lead 31 disposed upon a portion of pillar 20.

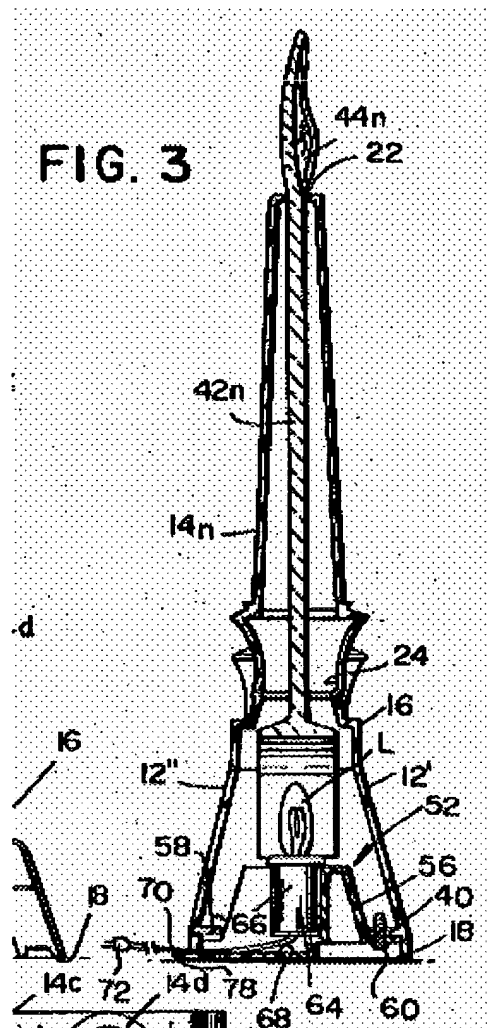
Regarding claims 20 and 21, see the previous remarks. The pillar 20 of Akiyama is optically conductive because it is made of the same material(s) (polyimide or the like).

Regarding claims 33-36, the previous remarks are incorporated herein. The claimed method steps are clearly suggested by Akiyama at column 14, lines 31-60. The pillar 20 has front and rear walls formed at right angles to substrate 120 (i.e., as shown in Figure 5A)

Regarding claim 37, electrode 38 of Akiyama is a coupling element formed on top of the pillar 20.

6. Claims 1 and 10 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent No. 3,681,588 to Lee.

Regarding claim 1, Lee discloses a system, comprising: a first substrate having at least one compliant pillar 42 transversely extending from the first substrate, wherein the compliant pillar 42 comprises a first material, and wherein the compliant pillar includes a non-flat tip 44 at the end opposite the first substrate. See Lee at Figure 3 and column 3, lines 10-34. Figure 3 of Lee is reproduced below.

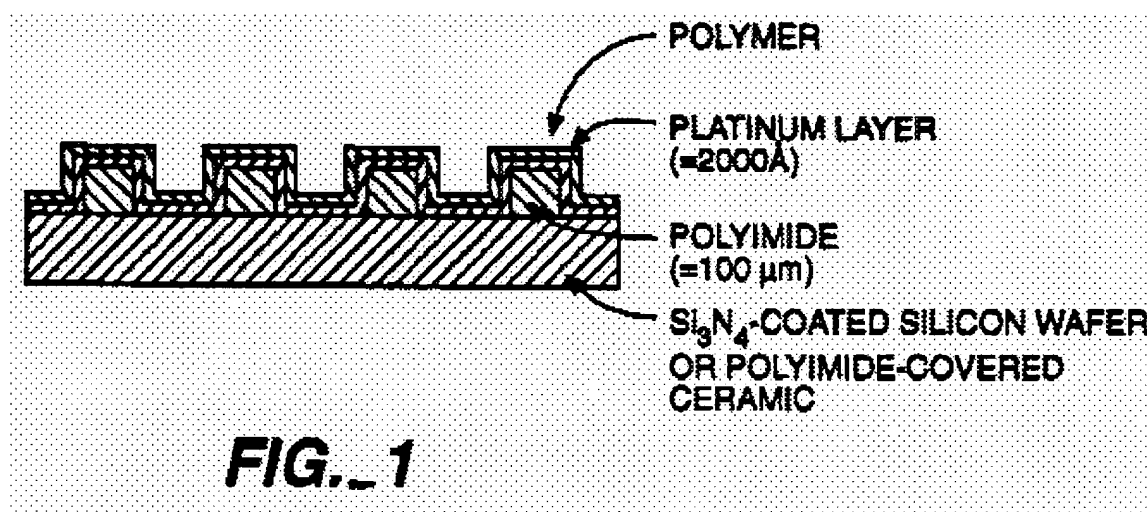


Regarding claim 10, the pillar 42 is used as an optical waveguide.

7. Claims 1-5, 15, 17, 19, 20, 21, 33, 34, 36-38 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent No. 5,294,504 to Otagawa et al. (hereinafter "Otagawa").

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Regarding claims 1-5, 15, 17, 19, 20, 21, 33, 34, 36-38, Otagawa teaches a method of forming an array of compliant polyimide posts from a layer of polyimide formed on a silicon substrate. The posts may be square, round, or have an irregular surface shape (i.e., a non-flat tip). See Otagawa at column 9, lines 18-59. Otagawa further teaches forming an electrically conductive platinum layer on portions of the posts extending from the base of the posts on the substrate to the end opposite the substrate. Figure 1 is reproduced below.



Allowable Subject Matter

8. Claims 30-32 are allowed.
9. Claims 6-9, 11-14, 16, 18, and 22-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter:
Regarding claims 6-9 and 13-14, the primary reason for allowance of the claims is the inclusion of a second substrate having at least one compliant socket to receive the compliant pillar, wherein the compliant socket includes a non-flat top surface. This particular feature is not

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disclosed or suggested in the prior art of record. Regarding claims 11-12, the primary reason for allowance of the claims is the inclusion of a diffractive grating coupler disposed on the compliant pillar or a mirror disposed on the compliant pillar. These particular feature(s) are not disclosed or suggested in the prior art of record. Regarding claims 16 and 18, the primary reason for allowance of the claims is the inclusion of a radio frequency lead disposed upon a portion of the compliant pillar. This particular feature is not disclosed or suggested in the prior art of record. Regarding claims 22-32, the primary reason for allowance of the claims is the inclusion of a second substrate having at least one socket to receive the compliant pillar and the lead, wherein the socket includes an optical contact that allows communication between the first substrate and the second substrate through the pillar. These particular feature(s) are not disclosed or suggested in the prior art of record.

Conclusion

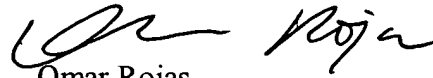
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (12:00PM-8:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Omar Rojas', is positioned above the printed name.

Omar Rojas
Patent Examiner
Art Unit 2874

or
July 20, 2005